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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shigeo Toji

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

YODER III, CHRISS S

ART UNIT

PAPER NUMBER

2622

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,427

Applicant(s)

TOJI ET AL.

Examiner

Chriss S. Yoder, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed March 16, 2006 have been fully considered but they are not persuasive.

Applicant argues that one of ordinary skill in the same art would not find it obvious to incorporate the teachings of Miyake into the thinning out process of Dotsubo, because Miyake converts low-resolution image into high resolution images and that Dotsubo converts low-resolution image into high-resolution images or high-resolution image into low-resolution. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Miyake reference was not relied upon for any of the thinning process, but rather for the low-pass filtering, therefore, the suggestion to combine the Miyake reference with the Dotsubo reference is to reduce high frequency components such as corners and thin lines so that jaggy is not produced in the output image (column 2, lines 63-66 and column 6, lines 30-44).

Applicant also argues that it would be necessary to also combine the teaching relating to the interpolating process of Dotsubo (S307 in figure 20) rather than the

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thinning process (S309 in figure 20). However, since the interpolation use by Miyake was not relied upon for any teachings, only the use of the low-pass filtering process was relied upon in Miyake, therefore, there is no need to incorporate the interpolation process of Dotsubo.

Applicant argues that the do not agree with the Examiner's interpretation of the limitation regarding coefficients k1-k5 being equal to "0.2" as an averaging function used to calculate a brightness level. However, the Examiner considers the use of five coefficients (k1-k5), of equal value (0.2, because with five coefficients, $1/5=0.2$), with each pixel value being multiplied by the coefficient, to be mathematically equivalent to an averaging function, as can be seen here:

$$(1) \quad D = k1 \bullet d(i) + k2 \bullet d(i+1) + k3 \bullet d(i+2) + k4 \bullet d(i-1) + k5 \bullet d(i-2)$$

or

$$(2) \quad D = \frac{d(i) + d(i+1) + d(i+2) + d(i-1) + d(i-2)}{5}$$

Equations (1) and (2) are mathematically equivalent, wherein equation (1) is the claimed formula and equation (2) is an averaging function of five pixels.

Applicant also argues that Miyake fails to disclose the low-pass filter process as claimed, because Miyake calculates the average of only nine pixels (3x3 window) after the LPF process instead of the target pixel d(i) and the adjacent (N-1) pixels. However, the Examiner points out that the use of only nine pixels (3x3 window) is merely an example (Miyake states this window can be any shape or size in column 6, lines 7-11), and that the calculation of the average of the target pixel and the adjacent pixels is used

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to calculate the new target pixel value by averaging during the LPF process (column 6, lines 30-40).

Applicant also argues that Miyake is completely silent about using a predetermined coefficient for each pixel, and instead merely broadly refers to a product-sum operation wherein the "average value" of nine pixels is calculated. The Examiner would like to point out that the use of nine pixels is merely an example in the Miyake reference, and that any number of pixels can be used (column 6, lines 7-11; including five pixels), and that although the use of a coefficient is not explicitly stated in Miyake, there is inherently a coefficient for each pixel in the averaging function (with five pixels, the coefficient is equal to 0.2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3-4, and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dotsubo et al (US Patent # 6,556,243) in view of Miyake (US Patent # 6,157,749).
2. In regard to claim 1, note Dotsubo discloses the an information-image displaying method for displaying an information image on a display in which a taken subject image is displayed on said liquid crystal display after a thinning process has been executed in

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accordance with a screen pixel number of said liquid crystal display (column 4, lines 55-65; and figures 5-6), and includes the steps of producing an original image of said information image in accordance with a primary pixel number of said subject image (column 11, lines 56-66 and figure 20: S301-S311, the image resolution of the "photographed image" and the "title image" are matched), executing a low-pass-filter process for said original image to obtain said information image, said low-pass-filter process performing an operation process relative to data of original pixels of said original image to calculate data of each pixel of said information image (figure 8: S31-S33; and column 8, lines 55-60), storing said information image in storage means (figure 8: S47), reading said information image from said storage means (figure 14: S129) and displaying said information image on said screen of said liquid crystal display after said thinning process (column 6, lines 35-40; column 14, lines 35-47, the image can be displayed after thinning; and figure 14: S137 and figure 20).

Therefore, it can be seen that Dotsubo fails to disclose that during the operation process, the original pixel to be processed and the adjacent (N-1) original pixels thereof are each multiplied by a predetermined coefficient and summed up, wherein said "N" is a natural number more than "3", wherein the brightness level of each pixel of said information image is calculated in said low-pass-filter process, and the brightness level after the low pass filter process is obtained using $D = k1 \cdot d(i) + k2 \cdot d(i+1) + k3 \cdot d(i+2) + k4 \cdot d(i-1) + k5 \cdot d(i-2)$, wherein $k1$ to $k5$ are "0.2" and the brightness level of a target pixel is represented by $d(i)$ and the brightness levels of the adjacent (N-1) pixels are respectively represented by at least $d(i+1)$, $d(i+2)$, $d(i-1)$, $d(i-2)$.

In analogous art Miyake discloses the use of an image processing method of filtering an image in order to reduce high frequency components such as corners and thin lines. Miyake discloses that during a low pass filter process the original pixel to be processed and the adjacent (N-1) original pixels thereof are each multiplied by a predetermined coefficient and summed up (column 6, lines 30-44), wherein said "N" is a natural number more than "3" (column 6, lines 30-44; in this example it is using N=9), wherein the brightness level of each pixel of said information image is calculated in said low-pass-filter process (column 6, lines 30-44), and the brightness level after the low pass filter process is obtained using $D = k_1 \cdot d(i) + k_2 \cdot d(i+1) + k_3 \cdot d(i+2) + k_4 \cdot d(i-1) + k_5 \cdot d(i-2)$, wherein k_1 to k_5 are "0.2" and the brightness level of a target pixel is represented by $d(i)$ and the brightness levels of the adjacent (N-1) pixels are respectively represented by at least $d(i+1)$, $d(i+2)$, $d(i-1)$, $d(i-2)$ (column 6, lines 1-11 and column 6, lines 30-44; the use of a window for the low pass filter is arranged in any shape, which is interpreted as any size, including five pixels consisting of one target and four adjacent, and as for the limitation of coefficients k_1 - k_5 being equal to "0.2", applicant's use of this the mathematical equivalent of an averaging function used to calculate a brightness level).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the Dotsubo device to include a low pass filter process wherein the original pixel to be processed and the adjacent (N-1) original pixels thereof are each multiplied by a predetermined coefficient and summed up, wherein said "N" is a natural number more than "3", wherein the brightness level of each pixel of said information image is

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calculated in said low-pass-filter process, and the brightness level after the low pass filter process is obtained using $D = k1 \cdot d(i) + k2 \cdot d(i+1) + k3 \cdot d(i+2) + k4 \cdot d(i-1) + k5 \cdot d(i-2)$, wherein $k1$ to $k5$ are "0.2" and the brightness level of a target pixel is represented by $d(i)$ and the brightness levels of the adjacent (N-1) pixels are respectively represented by at least $d(i+1)$, $d(i+2)$, $d(i-1)$, $d(i-2)$ as taught by Miyake in order to reduce high frequency components such as corners and thin lines (column 6, lines 30-44).

3. In regard to claim 3, note although Dotsubo does not directly disclose that N is greater than a maximum thinning number used in said thinning process, it is inherent that N is greater than the maximum thinning number (if N was smaller than the maximum thinning number, the information image would appear as dots, dotted lines or nothing at all after the thinning process).

4. In regard to claim 4, note Dotsubo discloses an imaging device that produces a thinned image as claimed in claim 1, as well as the use of a plurality of elements in the original image arranged at intervals so as to avoid affecting each other after the low-pass-filtering process (figure 6a: "CONGRATULATIONS!", each letter and symbol is considered to be an element; figure 6c: this is evidence that the elements are arranged at intervals so as to avoid affecting each other after the low-pass-filtering process).

Therefore, it can be seen that the primary reference of Dotsubo in view of Miyake lacks the use of a plurality of elements comprising a letter, a mark and a figure. However, Dotsubo does disclose the use of the elements separately (figures 5-6), and it would have been obvious to use them in the same image based on design choice (the image that is used as the original image to create the information image can be an image that

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includes anything, i.e. a letter, a mark, and/or a figure). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference of Dotsubo and Miyake to include the use of a plurality of elements comprising a letter, a mark and a figure based on design choice.

5. In regard to claim 6, note Miyake discloses that the low-pass-filter process is executed relative to a horizontal direction of said original image (column 6, lines 1-11 and column 6, lines 30-44; the use of a window for the low pass filter is arranged in any shape, which is interpreted as any size).

6. In regard to claim 7, note Miyake discloses that N is "5" containing the original pixel to be processed and two original pixels of each side thereof (column 6, lines 1-11 and column 6, lines 30-44 and figure 9A-9B; the use of a window for the low pass filter is arranged in any shape, which is interpreted as any size, including five horizontal pixels consisting of one target pixel in the center and four adjacent).

7. In regard to claim 8, note although Dotsubo does not directly disclose that the interval that corresponds to the original pixels is at least five, it is inherent that the interval be greater than or equal to "N" (after the low pass filter, if the interval were less than "N" the elements would overlap and become one element during thinning).

8. In regard to claim 9, note the primary reference of Dotsubo in view of Miyake discloses an imaging device that produces a thinned image as claimed in claim 1. Therefore, it can be seen that the primary reference fail to disclose the use of data ROM as the storage means. The template image used on figure 5 is stored on a memory card 46 (column 6, lines 48-57). Official notice is taken that the concepts and

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advantages of using data ROM are notoriously well known and expected in the art.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference of Dotsubo and Miyake to include the use of a data ROM to store the template image for permanent storage and to protect the image from being overwritten.

9. In regard to claim 10, note Dotsubo discloses that the information image read from said memory is composed with said subject image to be displayed on said liquid crystal display (figure 1: 34; figure 5; and column 2, lines 4-11; and column 14, lines 35-47, the composite image can be displayed).

10. In regard to claim 11, note the primary reference of Dotsubo in view of Miyake discloses an imaging device that produces a thinned image as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose that the information image is displayed in the right-upper corner of said subject image. However, Dotsubo does disclose the use of different types of information images (figures 5-6), and it would be obvious to alter the locations of the images within the subject image based on design choice (the image that is used as the original image to create the information image can be an image that contains elements anywhere within the image, i.e. the right-upper corner). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference of Dotsubo and Miyake to include the use elements in any location based on design choice.

11. In regard to claim 12, note the primary reference of Dotsubo in view of Miyake discloses an imaging device that produces a thinned image as claimed in claim 11. Therefore, it can be seen that the primary reference fails to disclose that the information

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image is displayed in a state that white letters are arranged in a black region. However, Dotsubo does disclose the use of different types of information images (figures 5-6), and it would have been obvious to change the colors of the image based on design choice (the image that is used as the original image to create the information image can be an image that contains elements of any color, including white letters are arranged in a black region). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference of Dotsubo and Miyake to include the use of an information image that is displayed in a state that white letters are arranged in a black region based on design choice.

12. In regard to claim 13, note Dotsubo discloses that the apparatus is a digital camera (column 1, lines 30-35).

13. In regard to claim 14, note the primary reference of Dotsubo in view of Miyake discloses an imaging device that produces a thinned image as claimed in claim 13. Therefore, it can be seen that the primary reference fails to disclose that the liquid crystal display is provided on a rear face of said digital camera. Official notice is taken that the concepts and advantages of providing the LCD on the rear face of the camera are notoriously well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference of Dotsubo and Miyake device to include the use of an LCD on the rear of the camera in order to allow the user to view the image while capturing.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CSY
April 17, 2006



TUAN HO
PRIMARY EXAMINER